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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/509,454	09/28/2004	Hubert Cecile Francois Martens	NL 030310	2233
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EXAMINER				
HEYI, HEENOK G				
ART UNIT		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/509,454

**Applicant(s)**MARTENS, HUBERT CECILE  
FRANCOIS**Examiner**

HENOK G. HEYI

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 29 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 2-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 September 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date 09/23/2005
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed on 10/29/2007 have been fully considered but they are not persuasive. In regards to applicant's argument that the reference used doesn't teach a recording/reading radiation beam as claimed in claim 3 with a wavelength approximately 655nm, examiner strongly disagrees. Accepting that the previously cited wavelength is not strictly for the recording/reading purpose as applicant argued, a wavelength used for reading/reproducing purpose is cited herein. The 680nm wavelength taught by Horie for recording and reading is not far off from 655nm and since the claim recites "approximately 655nm", 680 is considered approximate to 655. Applicant further argues that the claimed recording layer thickness is not taught by Horie. However, col 15 lines 40 to 50 indicate that Horie teaches the thickness of the recording layer in the specified range.

The last argument of the applicant that the metallic reflective layer would prevent the optical radiation beam from progressing past the first recording stack is again not a convincing argument because it is fairly obvious to one of ordinary skill in the art at the time the invention was made to use a non metallic reflective layer to avoid such problems. For further information on the use of non-metallic reflective layers, please refer to col 2 lines 24-27 from Lewis et al. 4,519,065. (see rejection of claim 9).

***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 2-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Horie et al. US 5,581,539 (Horie hereinafter).

Re claim 3, Horie teaches an optical data storage medium (10) for recording by means of a focused radiation beam (9) having a wavelength  $\lambda$  and entering through an entrance face (8) of the medium during recording, at least comprising: a substrate (1), including a guide groove with a depth  $g$ , the guide groove being present at the side of the substrate opposite to the entrance face (8), a recording stack (2, 3) of layers on the substrate (1) at the side of the guide groove, which stack includes: a write once recording layer (2) of a material having a complex refractive index  $n_R = n_R - i \cdot k_R$  at the wavelength  $\lambda$  and having a thickness  $d_{RG}$  in the groove portion and a thickness  $d_{GL}$  in the portion between grooves, being present adjacent the substrate, a non-metallic layer (3) of a substantially transparent material, being present adjacent the write-once recording layer (2), characterized in that the groove depth  $g$  is in the range  $(\lambda / 655) \cdot 20 \text{ nm} < g < (\lambda / 655) \cdot 140 \text{ nm}$  with  $\lambda$  expressed in nm (everything above have been disclosed in the Abstract), and wherein the wavelength  $\lambda$ , is approximately 655 nm (refractive index of 1.56 to a laser beam at a wavelength of 680nm, col 26 lines 65-67).

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Re claim 2, Horie teaches the optical data storage medium as claimed in claim 3, wherein the non-metallic layer mainly comprises a material selected from the group of transparent plastic, silicon, oxides of silicon, nitrides of silicon and carbides of silicon (oxides, sulphides, nitrides and carbides in which a portion of oxygen constituting metal oxides is substituted with S or Se can be used, see col 14 line 65-col 15 line 6).

Re claim 4, Horie teaches the optical data storage medium as claimed in claim 3, wherein  $g < 125\text{nm}$  (define the groove depth within a certain range corresponding to a wavelength of a reading-out light, col 3 line 60 and preferably from 40 to 80nm col 20 line 47).

Re claim 5, Horie teaches the optical data storage medium as claimed in claim 3, wherein  $g > 50\text{nm}$  (define the groove depth within a certain range corresponding to a wavelength of a reading-out light, col 3 line 60 and preferably from 40 to 80nm col 20 line 47).

Re claim 6, Horie teaches the optical data storage medium as claimed in claim 3, wherein the recording layer has a thickness  $d_{RG}$  and  $145\text{ nm} < d_{RG} * nR < 245\text{ nm}$  and the non-metallic layer mainly comprises  $\text{SiO}_2$  and has a thickness  $d_T$  in the range  $5\text{ nm} < d_T < 120\text{ nm}$  (the thickness is selected generally within a range from 10 nm to 100 nm, col 15 lines 40 to 50 and on the substrate were formed a layer at 120nm, a layer at 30nm, a layer at 20nm and a layer at 200nm, col 32 line 8-14).

Re claim 7, Horie teaches the optical data storage medium (10) as claimed in claim 3, wherein the recording layer has a thickness  $d_{RG}$  and  $132\text{ nm} < d_{RG} * nR < 220\text{ nm}$  and the non-metallic layer mainly comprises  $\text{SiC}$  and has a thickness  $d_T$  in the range  $5\text{ nm} <$

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$d_T < 60$  nm (on the substrate were formed a layer at 120nm, a layer at 30nm, a layer at 20nm and a layer at 200nm, col 32 line 8-14).

Re claim 8, Horie teaches the optical data storage medium (10) as claimed in claim 3, wherein the recording layer has a thickness  $d_{RG}$  and  $154 \text{ nm} < d_{RG} * n_R < 264 \text{ nm}$  and the non-metallic layer mainly comprises amorphous Si and has a thickness  $d_T$  in the range  $1 \text{ nm} < d_T < 20 \text{ nm}$  (on the substrate were formed a layer at 120nm, a layer at 30nm, a layer at 20nm and a layer at 200nm, col 32 line 8-14).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Horie et al. US 5,581,539 (Horie hereinafter) as applied to claim 3 above, and further in view of Miyamoto et al. US2001/0016242 (Miyamoto hereinafter) and Lewis et al. 4,519,065 (Lewis hereinafter).

Re claim 9, Horie teaches the optical data storage medium as claimed in claim 3, but Horie failed to teach that said optical data storage medium further comprises: a further substrate, adjacent said recording stack of layers, said further substrate including a guide groove with a depth  $g'$  in the same range as  $g$ , the guide groove being present at the side of the further substrate opposite to an entrance face adjacent to said recording stack of layers; and a further recording stack including: a further write-once recording

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layer of a material having a complex refractive index  $\tilde{n}'R = n'R - i'k'R$  at the wavelength  $\lambda$ , and having a thickness  $d'_{RG}$  in the groove portion and a thickness  $d'_{RL}$  in the portion between grooves, said further write-once recording layer being adjacent the substrate; and a further non-metallic layer of a substantially transparent material, being adjacent the further write-once recording layer. However, Miyamoto teaches a high density information recording medium having multiple stacks.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to modify the optical data storage medium of Horie to include multiple stacks of substrate and layers. The modification would have been obvious because of the benefit of more recording capacity. The metallic reflective layer of Horie might prevent the optical radiation beam from progressing past the first recording stack but it is obvious to one of ordinary skill in the art at the time the invention was made to use a non metallic reflective layer to avoid such problems. For further information on the use of non-metallic reflective layers, please refer to col 2 lines 24-27 from Lewis et al. 4,519,065.

### **Contact**

Any inquiry concerning this communication or earlier communications from the examiner should be directed to HENOK G. HEYI whose telephone number is (571)270-1816. The examiner can normally be reached on Monday to Friday 8:30 to 6:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, William Korzuch can be reached on (571) 272-7589. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Henok G Heyi/  
Examiner, Art Unit 2627

/William Korzuch/  
SPE, Art Unit 2627